UNITED STATES MARINE CORPS
2D FORCE SERVICE SUPPORT GROUP (REIN)
FLEET MARINE FORCE, ATLANTIC
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO

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25 Aug 1981

From: Senior Medical Department Respresntative, Coastal Survey Team 2-81, 8th Eng Supt Bn., 2d FSSG, FMFLant, Camp LEjeune, NC 28542
To: Officer-in-Charge, Coastal Survey Team 2-81, 2d Topographical Plt., 8th Eng Supt B., 2d FSSG, FMFLant, Camp Lejeune, NC 28542

Subj: Navassa Survey (CST 2-81) After Action Report; submission of

Encl: (1) Execution Summary
(2) Planning Phase
(3) Execution Phase
(4) Statistics
(5) Problems Encountered and Method of Resolution
(6) Preventive Medicine Overview of the Island
(7) Proposals to Improve Future Operations

1. In accordance with your requests, enclosures (1) through (7) are hereby submitted for your consideration.

A. O. MILLER
HM1 USN
Sr Med Dept Rep

EXECUTION SUMMARY:

The Medical Section was attached to CST 2-81 effective 23 June 1981. On 13 July 1981, we were transported to Guantanamo Bay, Cuba, for futher transportation via the USNS HARKNESS to the U.S. possession, Navassa Island. We commenced off loading of the ship via LCM at approximately 0700, 14 July 81, and shortly after arrival, the Medical Section was set and ready to receive any possible casualties. Prior planning of the medical personnel was well co-ordinated, and all aspects of the deployment of CST 2-81 went relatively smoothly.

The 38 days that CST 2-81 was deployed, the Medical Section encountered a myriad of medical problems and they will be covered in depth in enclosure of this report. Liaison was made with CWO(PA) COLLIER at the Naval Hospital, Guantanamo Bay, Cuba, for information regarding what could be expected medically while on the island. The information available was very sketchy, and will also be covered in enclosure (5).

The Planning Phase commended on 7 June 1981, with a meeting between HM1 MILLER, the SMDR, and CWO-2 BORGESON, the OIC for CST 2-81. The MAL was formulated from scratch with HM1 WILSON from MEDLOGCO, 2d Supply Bn., and the co-operation received from this unit was excellent, to say the least. HMC WAGER and HMC LINHART were responsive to our needs, and did everything possible to see that supplies were ordered and received, even with the short notice given.

Movement Phase was conducted as planned, and no injuries or medical problems were encountered.

The Execution Phase was also without any major medical incidents. Injuries were few and the emphasis on safety by all personnel was high. The major problems encountered were with the various types of contact dermititis and fungal rashes, and with the Metropium Toxifera, a highly caustic tree that is indigenous to the island. This will be covered in depth in enclosures (3) and (6).

Retrograde and/or evacuation of the island in preperation of the arrival of Hurricane Dennis was accomplished in a timely manner and also without incident. A force of 19 enlisted and 1 officer remained on the island to continue survey ops, and the remainder of the personnel were evaced to the USNS HARKNESS via helo lift. Final departure from the island was accomplished on 16 Aug 1981.

Numerous problems were encountered by the medical section. All were of a medical nature, and no difficulties were encountered with the Marine personnel. The OIC was responsive to our needs, and showed definate concern for all of his personnel. A complete statistical report is included in enclosure (4) of this report.

A complete Preventive Medicine overview is included in enclosure and goes in to detail with regards to the flora and fauna found on the island. Soil samples, samples of insect life, tree bark, water, and any thing else that might present a problem were taken to the Environmental Preventive Medicine Unit, Camp Lejeune, NC, for analysis, and a separate summary will be forthcoming upon receipt of results.

A proposal to improve further visits to Navassa is included in enclosure (7) of this report.

PLANNING PHASE:

On approximately 07 JUN 81, I was notified that I was to be the Senior Medical Department Representative for CST 2-81, intended for deployment to the Caribbean in July 81. At this time, supplemental medical personnel were selected, classes updated, supplies ordered, and records screened for past medical problems.

Classes were given to all personnel with regards to Heat Stroke and its prevention, personal body hygeinein the field, and first aid. Shot records were reviewed, and immunizations brought up to date. With the possibility of mosquitoes on the island, yellow fever innoculations were updated, as was tetanus, cholera, and typhoid. All records were thoroughly screened to separate any personnel who may have medical conditions precluding their deployment to an area where there was no primary medical care available. Supply amounts, types of medication and equipment to take, and the monetary involvement were considered, and necessary items were ordered by Medical Logistics Company, 2d Supply Bn., 2d FSSG. The contact point for the MED-LOG warehouse was HM1 J. E. WILSON assigned to the CST 2-81 medical staff. HMC WAGER and HMC LINHART were most helpful, and gave us excellent co-operation . A Medical Allowance List was formulated for the basis of information received from CWO BORGESON, Dr. CHANEY (Group Surgeon), and DR. BEVILLE from Camp Johnson Clinic.

The Medical Detachment comsisted of HM1 A. O. Miller (SMDR), HM1 J. E. Wilson (both HM-8425 NEC), HMC J. A. DELACRUZ (HM-8432 NEC), HM3 J. E. Miles (HM-8404 NEC), HM3 E. G. CHAMBERS (HM-8404/8483 NEC). At approximately six days prior to departure date, the medical section was at T/O strength, and the majority of the supplies had been received. Necessary open purchase items had not been received, but were later delivered to the island.

On July 11, 1981, the medical bloc was taken to 8th Engineer Battalion warehouse for staging and banding. HM1 MILLER and HM1 WILSON supervised the packing and banding of the medical bloc.

On 13 July 1981, the medica section, along with the MAL were transported to MCAS Cherry Point, NC, for further transfer to Navassa Island.

Information received prior to the departure was sketchy, and no one really knew much about what to expect from a medical standpoint. We did receive a copy of information on the possible flora of the island from one of the civilian biologists that was to be on the island. This was helpful, but not thorough. A full report is included in enclosure (6).

EXECUTION PHASE

The Medical Section assigned to CST 2-31 was tasked with the responsibility of providing medical support for approximately 50 marine personnel and 10 civilians assigned to the Navassa Island Survey. This included taking into consideration the terrain of the island, the remoteness, the availability of medevac capabilities and timeliness, the possibility of a life or death situation, the time of the year..ie..hurricane season, the temperature extremes, and the length of the operation. All tasking assigned to the Medical Section was met without a loss of efficiency or care provided to the attached personnel.

It was found that entirely too much medical equipment was taken for the operation. It was packed in 14-4 cu.ft. and 2-8 cu.ft. mount-out boxes. For an operation this size, we could have gotten by with approximately half of the equipment and supplies. However, it must be considered that there was no information available on the island from a medical standpoint and we were unaware as to what to expect. This will be thoroughly covered in enclosures (5) and (7).

Corpsmen were assigned to all teams going out to work on the line of sight for safety precautions and to provide the necessary on scene medical assistance if required. Preventive Medicine and Sanitation inspections of the rear area were conducted on a daily basis by the PMT Tech assigned to the team. No major discrepancies were noted, nor were any PMT problems encountered during the operation.

During the operation only one rodent, a rattus rattus, was encountered. He was quickly dispatched by the Marines. Rodent traps were set out, but no further rodents were observed during the remainder of the project. It is felt that this was an isolated incident and that the rat was probably accidently brought to the island by one of the Hatian fishermen that use the island for a watering point. A full PMT overview of the island is included in enclosure (6).

The terrain of the island was a major factor. The island is composed of coral, limestone, and volcanic lava, and should be considered 'rolling' to say the least. There were some areas of open 'grassland', but mainly the terrain is rocky with numerous crevices and minor caves. There are no major hills or mountains on the island to speak of, just the level table top style of the island. Some of the areas of limestone had been exposed to the elements for so long that they had formed needle sharp prominences that stuck up from a few inches to several inches in height, and should definately be considered a hazzard if fallen upon. Mined out areas gave rise to numerous holes between the rocks that varied in depth from a foot to 15-20 feet in depth. It can be related to trying to cross a strean and using the rocks as stepping stones.

While on the island, classes were given to re-emphasize the necessity of adequate fluid intake in a tropical area. The temperature extremes were from the low 70s at night to the high recorded of 128°F. The average daytime temperature in the afternoon was 107°F and working in conditions where the wet buld is constantly in the 100° area is extremely hazzardous. This will be covered fully in enclosure (5).

Water chlorination was accomplished on a 'need to' basis. Water was supplied in 55 gallon drums with a polyethelyne insert. It was chlorinated initially on the ship to 5ppm with a residual of 0.2 - 0.4ppm. It did require rechlorination after about 5 days of sitting in the sun. This was done with [illegible] at a time, or approximately 2 days worth of water allottment. The water in the cistern was the result of rainwater run off

and was not considered drinkable. It was used mainly for washing clothes and for daily body cleanliness, for fresh water washdown of gear exposed to sea air, and for emergencies if necessary. To sanitize the cistern, it was initially chlorinated to 50ppm with a residual of 5 to 7ppm after 2 hours of contact. This was considered safe level even for emergency drinking water should the occasion arise. The chlorine content was monitored on a daily basis and rechlorinated as necessary.

Medically speaking, the island was a definate challenge. Fungal infections and contact dermititis were quite prevalent in the personnel assigned to the team. Numerous antifungal agents and topical steroids were used to combat the rashes. However, after a few days treatment and apparent cures, the rashes would reappear. The main items used were Kenalog (spray and cream), Tinactin lotion, Pitrex, Mycelex, Cordran Cream, and Halotex. It turned out that one of the best medications for the fungus was plain old Undecetynic Acid solution and Gris-PEG, 125mg BID. For the contact dermititis and the poison ivy type rash caused by the metropium tree, it was found that Kenalog and/or Cordran cream was most useful. As stated, the symptoms and rash would resolve after only a few days treatment, but as soon as treatment was stopped, the infection returned within a short period of time. Itching was severe, and Benadryl 50-100mg PO was used to try to control itching, but Atarax up to 3 tablets TID was found to be of more benefit. With the patients we medevaced to Naval Hospital, Guantanamo Bay, Cuba, the hospital reported excellent results with the use of Halotex cream or lotion. On the Island however, we had only about 1/3 of the patients respond to treatment. This may be due to the persistency of the fungal agent on the island and constantly being exposed to it. A wide variety of treatment was used - occlusive dressings with Boros tabs, ultraviolet light exposure, chlorine baths, salt water baths/soaks, and Cordran cream occlusive dressings. For a while they all seemed to help the rashes, but after a few days were ineffective. At one point, we even tried a combination of Neosporin-G Cream, Tinactin Cream, and 1% Hydrocortisone Cream. As usual, it worked for a few days, but later became ineffective.

The initial stages of the rashes was controlled with the use of topical steroids, mainly Kenalog Spray. It is felt that the use of an oral steroid - Prednisone - would be useful in short term, high intensity treatment, so long as there was not a fungal infection present. The rashes took many forms - from a poison ivy type rash, to contact dermatitis as a result of contact with the guano, tree sap, and numerous other casuative agents. Contact dermatitis is a catch-all phrase that covers a wide spectrum of skin rashes of no known etiology. One major problem was that the differentiation of fungal infection and dermatitis rash was difficult to make. Fungal infections are supposed follow certain set patterns on the way they appear and the appearance of the lesions; the same with forms of dermatitis. On the island, this was not always true - fungal infections had the characteristics of contact dermititis, and dermatitis had the characteristics of fungal infections.

Mites presented a problem with treatment. After the initial rash or fungal infection, about 60% of the patients contracted mite infestation in and around the infected area. It is felt that the skins natural barrier was broken down by the presence of the skin rash, allowing the mite to establish itself. Kwell Cream and Eurax were used with excellent results. However reinfection did occur in over 50% of the patients, and required

retreatment several times. The personnel affected by the mites were usually the personnel who remained in the field and were near the birds a considerable time. On examining several of the birds, mites were noted to be in an endemic stage with them.

It was difficult to make a difinitive diagnosis due to the fact that we decided not to take a microscope set with us. This was a decision later regretted. This prevented us from doing a KOH prep and microscopic exam of tissue for fungal verification.

It should be noted that the Negroes and personnel of Spanish descent did not appear to have any reaction to the rashes and fungal agents. It is unknown as to why this was only in these race groups. A few days prior to final departure, 2 Negroes came down with a mild rash on the lower arms, but with topical steroids, it cleared up within 48 hours and did not reoccur. Also, they appeared to be very resistant to the metropium sap burns and rashes. Several Negroes did show a slight edema around the wrist area where the gloves were, but this was only in the Engineers who were directly involved in the jungle clearing operations. The survey teams did not have any problems. Further study should be done on this from a medical standpoint to determine the why behind this.

Statistics:

Approximate value of the medical supplies taken: $14,000

The following is a list of various types of illness/injuries encountered and treated while attached to CST 2-81.

Lacerations - 3	Cellulitis - 7
Metropia burns - 33	Atheletes foot - 17
Metropia Rash - 23	Strep throat - 4
Fungal rashes - 31	Abrasions/bruises - 73
Contact dermititis - 26	Heat casualties - 12
Blisters - 8	Eczema - 2
Scabies - 23	Sinus problems - 7
Hemmorhoids - 2	Medevacs - 3
Ear aches - 3	Diarrhea - 11
Constipation - 6	*Misc. - 160

*NOTE: This includes dressing changes, insundry medical questions/visits, personal advice and counseling, 2 asthma attacks.

Actual amount of supplies consummed was approximately $7,000.

Problems Encountered and Method of Resolution

During the Navassa Survey, no major problems, other than that of diagnosis and treatment were really encountered. The most significant problem though, was the medical evacuation procedures.

The two available helicopters for medevac were from the USNS HARKNESS, and from Naval Station, Guantanamo Bay, Cuba. the Harkness was usually no more than 30 miles from the island, except when they returned to Guantanamo Bay, or were in Jamacia. Guantanamo Bay was 90 miles to the north, and the helo did not have the capabilities of taking the patient and an HM if necessary for medevac. Due to the flying time and the fuel required to get to Navassa and back, weight was a factor for the return flight. The Harkness had the capabilities for medevac, but unless it was a matter of life and death, the helicopter would return to the ship instead of to the Naval Hospital, Guantanamo Bay.

No resolution was available due to the remoteness of the island. It is felt that the only resolution to this problem is to have a helicopter stationed at the island for the purpose of medevac and/or resupply as is needed.

Another problem encounter prior to the deployment was the lack of availability of information on the island. A call was made to the U.S. Army Intelligence Center (Medical Section), and even they had no information in their computers. The resolution to this problem will be to provide the Center with a copy of this medical report which be be included in their information tapes.

Possible problems at a future date could be the lack of fresh water in any quantity on the island. As mentioned earlier, the only fresh water available was from a cistern located near the lighthouse. This contains approximately 4,000 gallons of water when full. However, this would not be enough for a large operation. A suitable solution would be to either fly in the water in special barrels, or to station a water ship at the island for any prolonged operation involving more than 75 personnel, for a period exceeding 60 days.

Preventive Medicine Overview of CST 2-81

The most significant environmental hazzard is the island itself and the literal pitfalls there. Extreme caution is needed for traversing the island at anytime. Second would be considered the indigenous fungus and contact dermititis that is in the soil and plants. Soil and plant samples were brought back to be analyized and a future report will be forthcoming when the results have been received from the laboratory.

The insect population of the island is minimal. Very few flies were seen at the base camp. Mosquitoes too present no apparent problem, and few people were even bitten. Rodents present no problem, and other than the one rat seen on the first day, none were found. Neither are a hazzard.

The island appears to be made of coral, limestone, and lava rock, and extremely dry guano compounds. Samples of the guano (both relatively fresh and solid) was brought to the laboratory for analysis.

Except for a few lime trees on the island, there appears to be no other edible fruit on the island. The main vegetation is the Metropium Toxifera tree. This is a realitively toxic tree whose effects are heightened by the absence (or lack of) fresh water on the island. Also the phosphate content of the soil may attribute to the toxic effects. The barrel cactus, that is usually a well known source of "emergency" water is not palatable dum to its heavy alkaline taste. The metropium tree is in the family of the poison oak and poison sumac. Contact with the sap produces up to a third degree chemical burn, severe burning of the area contacted, and an edematous rash around the area. On several occasions, the civilian botanist located a Menchoerille tree. This too is caustic when the sap comes in contact with the body. Due to the scaricity of the tree, it is felt that it presents no health problem.

Meals consumed by the personnel were mainly C-rations. On two occasions, we were supplied with fresh fruit and steaks by the USNS HARKNESS. Some items of fresh fish and fruits were bartered from the Hatian fishermen that occasionally visited the island. All items were inspected before barter took place, and it was determined that only items that had to be cooked or peeled were acceptable due to the possibility of communicable diseases. No one came down with any illnes attributalbe to the barter. LRRPs were also provided as a change of pace to the c-rations. At no time was there ever any problem with spoilage of the c-rations.

The overall sanitary condition of the base camp was considered to be satisfactory. Clean-up was accomplished on a daily basis, and garbage and trash was disposed of by dumping. The latrine was cleaned and sanitized on a daily basis with a hyperchlorine solution.

Navassa harbors many types of reptile life. The most numerous was a greenish-brown and yellow stripped lizard. These are of a non-poisonous variety, and take great care to stay out of way of humans. A few "blind" snakes were seen, but these too are of a non-poisonous variety, and left the area in a hurry when the troops moved in. A few types of boas were seen, but these were few and far between, with the largest being approximately 18" in length. At no time were any poisonous reptiles seen.

A hazzard was presented by the numerous scorpions on the island. They did not frequent the billeting areas, but while cutting the vegetation or turning rocks, they were usually found. They were small, usually no more than a few inches in length, but very aggressive if disturbed. No one was reportedly bitten by them, however.

Mammalian life on the island consisted of a type of Targenberger goat, "Boobie" birds, a few doves, and many bats. None of the animal life appeared to be sick in any way. No real threat the personnel was ever demonstrated, except for the few times some of the troops tried to catch some of the goats. They can become very hostile if tormented. One on occasion, two goats were killed and a barbecue was erected. The goats appeared healthy, and it was determined that they were edible. After the barbecue, the troops heartily agreed. The goats ranged the entire island, staying away from the personnel as much as possible, and would rather flee if confronted than stand and fight.

The bats appeared only at night, needless to say, and presented no significant hazzards to the personnel. Due to the lights for security at night, they frequented the billeting area to eat the moths and bugs that were attracted to the light. No sign of illness was noted among the bat population, and they presented no real hazzard to personnel. No reports of bites were reported to the medical section.

The bird population is quite extensive. A few of the personnel tried eating them and reported that they weren't very palatable. This is due to their diet, mainly fish, that gives the meat a distinct fishy flavor, and very strong gamey taste. Once again, the birds appeared to be healthy, and the only dead birds noted died from accidents - flying into cliffs, having trees fall on them during cutting line-of-sight, etc... These birds, the Boobies, are not known for their intelligence. They apparently have no fear of man, and would not fly away, even when the tree they were in fell on top of them. A few doves were noted, but they stayed well away from the populated areas. The main health hazzard the birds provided was from their droppings and the mites on their bodies.

The one other significant find was the Mencheniolle tree. This is a similar tree to the Metropium, and in somes ways, more toxic. When it is in bloom, it has a fruit that bears resemblence to a crabapple, and does, in fact, smell like fresh apples. It is extremely toxic, and the fruit should not be eaten. One fruit the size of a golfball is toxic enough to kill a 150 pound man in a few hours. There is no antidote for the poison other than symptomatic treatment and life support. When it rains, the tree emitts a highly alkaline substance through the leaves and anyone standing under the tree will suffer first and second degree chemical burns to all exposed skin. The sap, if gotten in the eyes can cause temporary or even permanent blindness, and does cause extreme pain.

Proposals to Improve Future Operations

1. Due to the lack of vector agents and insect population, it is recommended that a Preventive Medicine Tech (HM-8432) be deleted from the Medical Department assigned. All HM-8425, Independent Duty Techs have been trained in the basics of PMT and have a working knowledge of the program.

2. Thorough information compiling prior to departure and the reliable establishment of possible medevac lines that do not rely on aircraft from as far away as 90 miles.

3. That future medical sections take a small but complete laboratory set as part of the basic set. This will enable them to do KOH preps and accurately diagnose the ailment. Also, it will allow routine CBC's, urinealysis, and even culture studies to be done to determine the causative agent of infections.

4. That future operations take a Medical Officer who is versed in the effects of tropical medicine or else a dermatologist. This would allow for a broader scope of treatment to be administered and for the closer study of the fungal and contact dermatitis agents present.

5. That a shower unit (if water supply available) be taken to maintain body cleanliness. Sponge baths with a half gallon of water was not really sufficient to maintain personal hygeine levels.

6. Vitamin suppliments be included in the medical block for issuance on a daily basis to the personnel. This will suppliment the diet of C-rations to the minimum daily requirements of essential vitamins and minerals needed for the maintenance of body functions and health.